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The New York Times

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Although much of the country has barely noticed, avian influenza — a version of the virus that generated “Killer Bird Flu!” headlines a decade ago — is now sweeping the Midwest.

More than 20 million turkeys and chickens have died or been culled; Iowa, Minnesota and Wisconsin have declared states of emergency; and teams of experts are trying to figure out how the new virus is spreading.

No humans have caught this flu, but health officials fear they might. They are requiring that cullers and barn-cleaners wear the kind of protective gear that Ebola workers do. Officials have also advised that everyone who was recently in contact with affected poultry operations — workers, truckers, veterinarians and so on — take Tamiflu, a flu preventive.

This is not the Asian H5N1 flu virus, which has killed 440 of the 826 people known to have gotten it since 2003. But the three avian flus found in this country since December are related to it — each produced, scientists believe, when the Asian H5N1, an efficient killer of birds and people, mixed with less dangerous avian strains.

No one knows how lethal any of the new viruses might be to humans. But because the virus spreading in the Midwest can wipe out most of a flock in two days, all are assumed to be dangerous.

The authorities are preparing for the panic that may ensue if someone

Submitted by Dr. Pearl Besserman

catches one of these viruses and dies. Still, officials, say, most Americans are in little danger. The overall risks pale compared with those posed by well-known mortal threats that elicit no panic: car crashes, bee stings, bathroom falls and so on.

"We deem this a low human health risk — low, but not zero," said Dr. Anne Schuchat, the director of the National Center for Immunization and Respiratory Diseases at the Centers for Disease Control and Prevention. "So far, we don't have worrisome signs. But we don't want to be overly reassuring, because with influenza, we always take events quite seriously."

The three flu viruses found recently in American birds are an H5N8, an H5N2 and a new H5N1.

The new H5N1 virus has been found only in three wild birds in Washington State. The H5N8 virus, moving south from Canada in December, infected a few poultry farms in California and Idaho but has not been reported recently.

The H5N2 virus, however, is spreading rapidly in Midwest poultry operations and is the largest such outbreak in North American history.

The lethal ancestor of all three viruses, the Asian H5N1, was first identified in 1997 when it killed six people in Hong Kong. To stop it, every chicken in the territory was slaughtered, and poultry imports from China were banned.

The virus disappeared, although experts assume it circulated in China without being reported. It re-emerged in Hong Kong in 2003 and has spread to Asia, Europe and Africa.

It has killed people in Indonesia, Egypt, Vietnam, Cambodia, China and elsewhere — most of whom had contact with live poultry, often in backyard flocks. A few infections appear to have been transmitted within families after one member nursed another.

That Asian virus has never been found in the Western Hemisphere. But the flu viruses spreading here now contain some of its genes, including those for the H — for hemagglutinin — "spike" it uses to attach to cells.

The H5N8 virus is thought to have emerged before 2014, when Asian

H5N1 mixed with a milder duck flu in China with a different “N” gene. (“N” stands for neuraminidase, the protein “helicopter blade” that chops away receptors on a cell’s surface so virus particles can escape. There are 18 H shapes and 11 N shapes, and each virus has six other genes that also determine its lethality.)

That H5N8 spread to Japan, Russia and Europe before turning up in Canada.

The H5N2 and the new H5N1 have some North American genes and so clearly emerged on this continent more recently — presumably when the H5N8 virus finally arrived and crossed with North American strains.

That may have happened last summer. Migratory ducks, geese and swans from around the world share ponds in the Arctic in summer. New flu gene mixes emerge and move south along the various migratory paths taken by the birds.

Whatever the mix of genes, dose size is also important in determining spread of the virus, said Dr. Peter Palese, a flu expert at the Mount Sinai School of Medicine.

Human flus can infect people who inhale only one to 10 virus particles, he said, but it takes 100,000 to 1 million particles of an H5 bird flu to infect a human.

“That’s why people who sleep under their chickens in markets in Asia get it, and we don’t get it on Fifth Avenue,” Dr. Palese said.

In birds, flu is primarily an intestinal disease rather than a respiratory one, so cullers and cleaners are told to wear coveralls, face masks and goggles to prevent any barn dust — much of which is powdered feces — from entering their noses, mouths or eyes.

Dr. Palese says he believes they should wear the full hoods with battery-powered air filters used in biosafety Level 3 laboratories.

Officials, he said, should also consider giving them the vaccines developed years ago against H5N1. Although it would not be a perfect match, it might provide some protection.

Several million doses of an experimental vaccine are in the National

Strategic Stockpile, said Dr. Anthony S. Fauci, the director of the National Institute for Allergy and Infectious Diseases.

It was created in the early days of panic over the Asian H5N1.

Blood samples from people who received the experimental vaccine years ago are now being tested to see if they contain antibodies that help protect against the new flus, a C.D.C. official said.

The agency has also begun work on a vaccine against the new H5N8 virus, Dr. Schuchat said, and can make one against H5N2 virus, as well. But producing it in large quantities can take months or even a year.

To cull birds, farm operators normally cover them with a suffocating carbon dioxide foam. As they decompose, said Henry L. Niman, a biochemist in Pittsburgh who tracks genetic changes in flus, the heat generated kills the virus and the carcasses can be used as compost.

But that stops poultry production in the barn for weeks.

Other methods include incineration in portable kilns, and burial, though each have drawbacks. With burial, rotting birds could end up in the water table; with incineration, infectious feathers or other particles could blow up the stack and into the wind.

Because the virus lives in dried feces and feathers that could blow off trucks, the risks to humans could increase drastically, Dr. Niman warned, if dead birds are removed from the barns prematurely.

"I'm worried that this is getting so big that they may cut corners," he said.

State health officials in the 16 affected states are monitoring all exposed people for 10 days, said Lenée Blanton, a C.D.C. epidemiologist.

Those with diabetes, compromised immune systems or any other conditions that would make flu complications more serious should be prescribed antiviral medicines like Tamiflu or Relenza even if they have no symptoms.

In Asia, Dr. Niman said, even dogs that ate carcasses of culled birds caught the H5N1 flu.

"It's like Ebola — it's only going to take one person who dies, and they aren't going to believe the C.D.C. saying 'low risk, no risk.'" he said. "People

will panic.”

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#### **SCI-FILE**

### **H7N9 flu virus poses pandemic threat**

Scientists in China have identified an influenza virus that they say has the potential to spread around the world, sickening and killing people whose immune systems have never faced a threat like it.

The H7N9 flu emerged in humans in eastern China in February 2013, sickening 133 people and killing about a third of them before winding down in May. It re-emerged in October 2013 and has been spreading steadily since.

"H7N9 viruses should be considered as a major candidate to emerge as a pandemic strain in humans," they wrote in a study published Wednesday by the journal Nature.

According to the World Health Organization, 571 people have had laboratory-confirmed H7N9 infections and 212 people have died.

The virus developed in birds before spreading to humans. Like the H5N1 bird flu and the H1N1 swine flu, it contains a combination of genes that are new to people.

Carol Fukunaga, Council Member  
Honolulu City Council, District 6  
530 South King Street, Room 202  
Honolulu, HI 96813-3065

March 17, 2015

Att: Chris Delaunay  
Subject: Feral Chicken Infestation

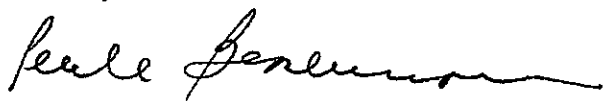
Dear Honolulu City Council Member Fukunaga,

Thank you for your follow-up letter of February 19<sup>th</sup> regarding your senior aid Chris Delaunay's investigation of the out-of-control feral chicken incursion throughout our Nuuanu district and, increasingly, the city of Honolulu. After Chris and I met and toured the area along the Nuuanu Stream, we discovered that the source of the problem lies primarily within two specific properties: the first, near or adjacent to the Nuuanu Stream and Pali Highway, belongs to the Department of Land and Natural Resources; the second was traced to the owners of the property at 355 Auwaiolimu Street. Representing your office, Chris contacted and advised both parties of their responsibility to hire a licensed pest control agent to rid the area of the feral chickens. At the same time, I brought the problem to the attention of the Craigsides condo board and am still waiting for a reply. After a follow-up phone conversation with Chris, I learned that neither the Department of Land and Natural Resources nor the property owners at 355 Auwaiolimu Street have done anything to control the feral chicken problem as advised.

Except for a few residents at Craigsides Tower II (38 South Judd Street) where I live, most of my neighbors shrugged off the problem, saying it was just "part of living in Hawai'i." The recent Star-Advertiser article I'm including here belies that notion. After reading it, I am sure you'll agree that the influx of feral chickens on our property and throughout Nuuanu and the entire city (including Manoa, Diamond Head, Waikiki, Downtown, and Kailua, to name only a few areas where feral chickens are proliferating daily) is no laughing matter but a serious health hazard. Recent global pandemics of diseases like SARS, H5N1 Bird Flu, and H1N1 Swine Flu provide a chilling reminder that new and untreatable viruses like the lethal H7N9 bird flu currently spreading throughout China and predicted to infect people worldwide, is a good reason to deal with our feral chicken problem seriously, before it makes us sick.

Thank you for your time and attention.

Sincerely,



Perle Besserman, Ph.D.  
38 South Judd Street-Apt. 26A

Honolulu, HI 96817  
(808) 537-4347

cc: Dean Fujii- President, Craigside Condo Board  
Bernie Briones, Craigside Property Manager- Hawaiiana  
Email Letter to Star-Advertiser; Keioki Kerr- KGMB News  
Kirk Caldwell, Mayor, Honolulu